REMARKS

Claims 1-5, 13-15 and 28-30 remain in the application. Claims 6-12 and 16-27 have been previously canceled. Claims 1 and 13 have been amended. Claims 31-32 have been added.

Rejections Under 35 U.S.C. §§ 102(b) and 103(a)

Claims 1, 2, 5, 13 and 14 were rejected under 35 U.S.C. § 102(b) as being anticipated by Bruce Bartlett, "Tonal Effects of Close Microphone Placement" ("Bartlett"). Claims 3, 4, and 15 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bartlett. Claims 28-30 were rejected under 35 U.S.C. §103(a) as being unpatentable over Bartlett in view of Niwayama.

These rejections are traversed, in part, because the cited references fail to teach or suggest a microphone-tailored equalizing system and method recited in the claims. In looking at Bartlett, it is noted that this reference excludes the choice of a pre-selected location, and further excludes the design of a microphone-tailored equalizing system, as recited in the pending claims. Applicant has amended claims to further bring out these features of the present invention.

Design, Assembly, and Construction:

Applicant believes the Bartlett reference lacks any reference to the steps of design, assembly and construction, as recited in steps 6 through 9 of amended claim 1 (and elsewhere). Claims 1 and 13 have been amended to include first and second differences over first and second discrete frequency bands to make clear that the presently claimed invention pertains to the physical construction of filters to correct these differences and not to a single filter for any single

frequency band adjustment where there may randomly already exist a constructed filter which is suitable for use as in the present invention. Nowhere is it taught in the cited references or in any products currently available for sale a device including more than one such filter element, suitably designed and incorporated in an embodiment for use as described in this application. The claims as amended (to include two such elements based on two such differences) are revised to avoid reading on the random existence of any given filter element including those found in commercially available equalizers, and to be directed to accomplishing a more completely designed system.

The Office Action makes several references to design or construction, as follows (underscores added):

From the Office Action, page 2, five lines from page bottom: "Section 5 teaches that an equalizer for the close microphone for the guitar can be made by utilizing the inverse of the spectral curves of figures 4-15. See figure 16."

From the Office Action, page 3, nine lines from page top: "Bartlett discloses a method for constructing a tailored-made equalizer for a microphone attached to a guitar comprising generating reference sounds, generating sounds from a microphone place proximate to the guitar, comparing the two sounds and making an equalizer based on the inverse of the difference of the two sounds.

From the Office Action, page 3, five lines from page bottom: "Thus, one of ordinary skill in the art would have been motivated to provide an equalizer ..."

Applicant finds no mention in Bartlett about designing or constructing anything. All of his language is used and understood daily in the art to describe the process of using standard equalizers (parametric, shelving, graphic, etc.) to equalize signals for a myriad of purposes. E.g., Bartlett states on pg. 731 section 5 par. 1:

"For example, if a steel-string guitar must be miked 80 mm (3 in) from the sound hole to reduce feedback or leakage, it can be made to sound more "natural" by sharply rolling off low frequencies below 300 Hz."

This description implies - "use an equalizer that you have available to roll off low frequencies below 300 Hz". This would never be interpreted to one skilled in the art as 'construct an equalizer that rolls off low frequencies below 300 Hz'.

In the art, when you say to any sound engineer, for example, "I can equalize the muddiness out of that bass drum," the engineer will understand it to mean you will use one of a limited number of standard equalizer types to adjust the bass drum signal in the lower frequency range. The engineer might tell you about his/her favorite brand or type of equalizer for doing this. An engineer would not think that you mean "I can build an equalizer to take the muddiness out of a bass drum". In the presently claimed invention, a tailored equalizer is built to correct first and second differences between the mic and the reference sounds from an acoustic instrument. Absent the present specification, the prior art of record and the products available for purchase would not suggest the actual CONSTRUCTION of an equalizer. Applicant contends that if a sound engineer were to be presented with the idea of constructing an equalizer to take the muddiness out of a bass drum, the engineer would say "Why do you need to build one? There are loads of equalizers that can do this!" The answer to that query is a description of the advantages of ease of use, lack of need for experience, advantages in time to do the job, simplicity of construction (therefore advantages of manufacturing cost) – in essence, the answer would be the specification of the patent application.

Bartlett is directing his thoughts and teaching to helping sound engineers do a particular and common job with off-the-shelf equalizers. He has not done any work to examine the possibilities of simplification via research, design, and experimentation, and so he does not anticipate the unexpected and desirable results possible for accomplishing his goals by designing

and constructing an equalizer that, without knowing such a device's specific purpose, may look like an odd and useless construct of filters, equalizers, and mixer paths.

In considering if it 'would have been obvious' to construct such a device, it is impermissible to use the teaching of the present application to draw such a conclusion. The Bartlett reference is dated 1981. In the intervening 17 years before the filing of this application, Applicant knows of no devices tailored to compensate for differences between two signals, no references to building anything, no description of or reference to any disclosed embodiment of any sort at all.

The Office Action also states (see page 2, three lines from page bottom):

"Figure 17 shows the attached microphone and its tailored made equalizer."

Applicants cannot find any equalizer or reference to any equalizer in the reference. Figure 17 shows a guitar with an attached microphone (17a) and a supposed response curve (17b) of that microphone, with the sole description described at Bartlett, pg.733 Col. 2, top paragraph:

"An example of such a microphone is shown in Fig. 17(a). It is designed to be clipped onto the sound hole of a guitar and provides a good starting-point tonal balance for this position. Its frequency response is shown in Fig. 17(b)."

If the Examiner considers it useful, a listing of references to equalizing in Bartlett, with individual responses by the applicant, is found in the addenda at the end of this Amendment .

Determining a specific location:

Note that (e.g.) in claim 13 of the present invention, there is specified "...a microphone element adapted to be placed at a specified selected location...". This key feature is nowhere discussed in the Bartlett reference. In several places, Bartlett directs the reader to experiment on each occasion, to find the most suitable result for a given instrument, situation, and environment. He does not imply that there is a specific placement for any purpose, and does not teach selecting a specific placement will lead to a superior or easier-to-use embodiment.

For example, Fig 16 and its discussion (Bartlett p731) – shows an equalizer suggested for the position of Fig. 4 (8 cm from the sound hole). There is no suggestion that this is a superior or desired position; to the contrary, it is described as a much worse sounding location ("Very bassy, thumpy, muddy, full" than (e.g.) the 15 cm position of Fig. 12 ("Natural, bright, clear transients").

More explicitly, from Bartlett pg. 737 - section 11:

" Conclusion The 1-m reference positions were generally judged to provide a more "realistic and natural" sounding timbre than any of the close positions tested. This suggests that if a "natural" timbre is desired, an instrument generally should be miked only as close as necessary (assuming that the room acoustics are suitable). If very close placement is a must, the instrument can be equalized as suggested in this report, as a beginning; or a microphone with an appropriate frequency response can be used. Final adjustments should be done by ear to suit the particular instrument and application.

The intent of this report has been not to define the ideal microphone technique for a particular instrument, but rather to indicate the general tonal effects that can be expected in various close microphone positions."

Thus, the Bartlett article describes using equalization as a possible improvement, but only as a last resort, as the conclusion notes ("If very close placement is a must, the instrument can be equalized as suggested in this report, as a beginning;..."), whereas the presently claimed invention seeks, in part, to create a unique type of equalizer for a specified location of the microphone. There is also no step for determining a specific position for use in a particular way,

as Bartlett states "...The intent of this report has been not to define the ideal microphone technique for a particular instrument, but rather to indicate the general tonal effects that can be expected in various close microphone positions." An important feature of the presently claimed invention is to specifically determine a particular type of "ideal microphone technique for a particular instrument".

Variable controls:

From the Office Action, page 4, six lines from the top of the page:

"However, it was well known at the time of invention that equalizers were constructed with variable controls, as evidenced by Niwayama (figures 1, 6, 11)."

Applicants agree that equalizers are commonly constructed with variable controls, as evidenced by those on almost every radio and television set made in the last 50 years. The Niwayama reference specifically shows an arrangement that allows two separate sets of equalizing adjustments to be made using a single common digital circuit. Niwayama fails to make up for the deficiencies of Bartlett. In Niwayama, no controls or circuitry is provided to compensate for differences between two signals as recited in each of the pending claims.

CONCLUSION

For all the above reasons, the Applicant respectfully submits that this application as amended is in condition for allowance. A Notice of Allowance is earnestly solicited.

The Examiner is invited to contact the undersigned at (202) 220-4200 to discuss any matter concerning this application. The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. § 1.16 or § 1.17 to Deposit Account No. 11-0600.

Respectfully submitted,
KENYON & KENYON

Dated: 7/3/03 By: Shawn O'Dowd

Shawn W. O'Dowd
Reg. No. 34,687

KENYON & KENYON
1500 K Street, NW, Suite 700
Washington, D.C. 20005-1257
(202) 220-4200 telephone
(202) 220-4201 facsimile

Addenda:

From Bartlett pg 727: "2 TONAL CORRECTION If a sound engineer wants an instrument to sound "natural" or "well balanced" when miked up close, the following can be attempted: 1) equalize the instrument so that it sounds "right", 2) choose a microphone that makes the instrument sound right, or 3) find a microphone placement close to the instrument that sounds right. The purpose of this report is to help the sound engineer accomplish these objectives more efficiently."

– re: "1) equalize the instrument so that it sounds "right"...."
Applicant's response - One can't equalize the instrument; Bartlett is using the phrase as it is commonly meant in the trade, which is to use (not CONSTRUCT) frequency-shaping devices to change the signal timbre. The same language is used on page 736, par.5 ("...the piano can be equalized according to the inverse of each spectral curve...").

– re: " 2) choose a microphone that makes the instrument sound right...."
Applicant's response – The use of the word 'choose' indicates that no one is constructing anything here either.
– re: "The purpose of this report is to help the sound engineer accomplish these objectives more efficiently."
Applicant's response - The whole report is thus directed to sound engineers, who are people that use equalizers, and NOT to electrical engineers, who create newly designed devices. Thus, the paper is written for, and includes only information relating to, a DIFFERENT FIELD OF ART than that of constructing devices.

P 731: "5 EQUALIZATION RECOMMENDATIONS FOR ACOUSTIC GUITAR The inverse of each spectral curve shown previously is the equalization required to make a close-miked guitar sound as it does at 1 m in front..."
Applicant's response - It is noted that this section refers to the equalization required, but does not describe a particular EQUALIZER that is required.

P 731: "5 EQUALIZATION RECOMMENDATIONS FOR ACOUSTIC GUITAR... "... it can be made to sound more 'natural' by sharply rolling off low frequencies below 300Hz."... "If a cardiod microphone... is used...an additional 6 to 12 dB of rolloff at 100Hz typically is required to obtain a natural timbre".
Applicant's response – This is all standard language for eq'ing a signal using a standard off-the-shelf equalizer.

P731-732: "The exact equalization to achieve a well-balanced timbre varies with the instrument, but these spectral plots indicate where to start."
Applicant's response – With respect to claim 5 of the present application, Bartlett does not discuss the possibility of finding commonalities in many instruments, or that such a discovery could lead to any improvement in the art. As stated above, Bartlett is referring to "where to start" adjustments of an off-the-shelf equalizer.

P732: "As an alternative to equalization, an omnidirectional microphone with a bass rolloff would tend to provide a well-balanced sound when placed near the sound hole. An example of such a microphone is shown in Fig. 17(a)."
Applicant's response - There is no reference to what this supposed device is. It is not listed in the equipment bibliography, and omni microphones do not come with low-frequency roll-off filters, though cardiod (and other directional mics) do. The author may have been thinking that one could construct an omni mic with the same type of filter as is commonly found on some directional mics, but never mentions any such thing.

Bartlett pg. 735 section 6.2 Microphone Frequency Response, par. 1: "If the recording microphone has a response that does not complement the spectral effect of close placement, then its response must be compensated for by equalization."
Applicant's response - As stated above, this is additional passive description of the use of an off-the-shelf equalizer. There is no discussion or teach of active design or construction of an equalizer in this section.

Bartlett pg. 736 - section 9 VOICE
"...The sound engineer may want to equalize the close-miked voice according to the inverse of the curves shown. That is, a 3dB dip at 800 Hz may make the voice slightly more "natural," and a high –frequency rolloff may reduce sibilance and lip noises..."
Applicant's response – All standard language for eq'ing a signal using an off-the-shelf equalizer.

Bartlett pg. 737 - section 11 Conclusion
" The 1-m reference positions were generally judged to provide a more "realistic and natural" sounding timbre than any of the close positions tested. This suggests that if a "natural" timbre is desired, an instrument generally should be miked only as close as necessary (assuming that the room acoustics are suitable). If very close placement is a must, the instrument can be equalized as suggested in this report, as a beginning; or a microphone with an appropriate frequency response can be used. Final adjustments should be done by ear to suit the particular instrument and application.

The intent of this report has been not to define the ideal microphone technique for a particular instrument, but rather to indicate the general tonal effects that can be expected in various close microphone positions."
(Applicant's response is discussed above)